DS500
Telephone dialer

Summary

WARNING: READ CAREFULLY AND SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

| Regulatory list: |
|---|
| EN 50130-4: Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intrusion and personal alarm systems |
| ETSI EN 301 511 V12.5.1: Global System for Mobile communications (GSM); Mobile Stations (MS) equipment; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU |
| ETSI EN 301 908-1 V15.2.1: IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 1: Introduction and common requirements; Release 15 |
| ETSI EN 301 489-1 V2.2.3: ElectroMagnetic Compatibility (EMC) standard for radio equipment services; Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Compatibility |
| ETSI EN 301 489-52 V1.2.1: ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 52: Specific conditions for Cellular Communication User Equipment (UE) radio and ancillary equipment; Harmonised Standard for ElectroMagnetic Compatibility |
| ETSI EN 301 489-17 V3.2.4: ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for ElectroMagnetic Compatibility |
| EN 62368-1:2020 + A11:2020: Audio/video, information and communication technology equipment Part 1: Safety requirements |
| IEC 62368-1:2018: Audio/video, information and communication technology equipment - Part 1: Safety requirements |
| EN 62311:2018: Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0Hz - 300GHz) |
| IEC 62311:2007: Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0Hz - 300GHz) |

Technical drawings
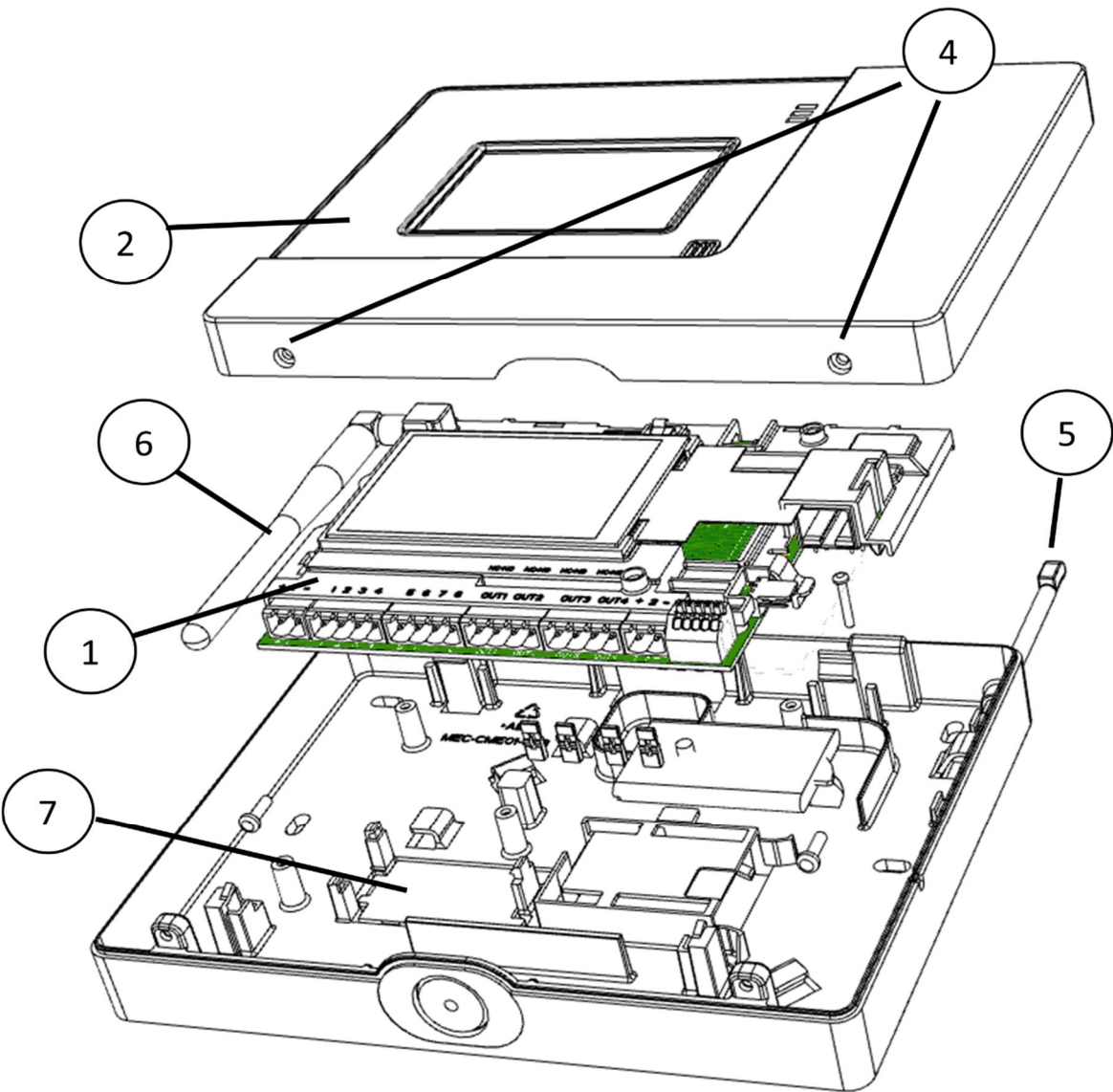
Figure 1

Image description:	
1	Internal part DS500
2	Front external shell
3	Back external shell
4	Holes for shell locking screws
5	Stylus (included)
6	GSM antenna
7	Openable cable passageway
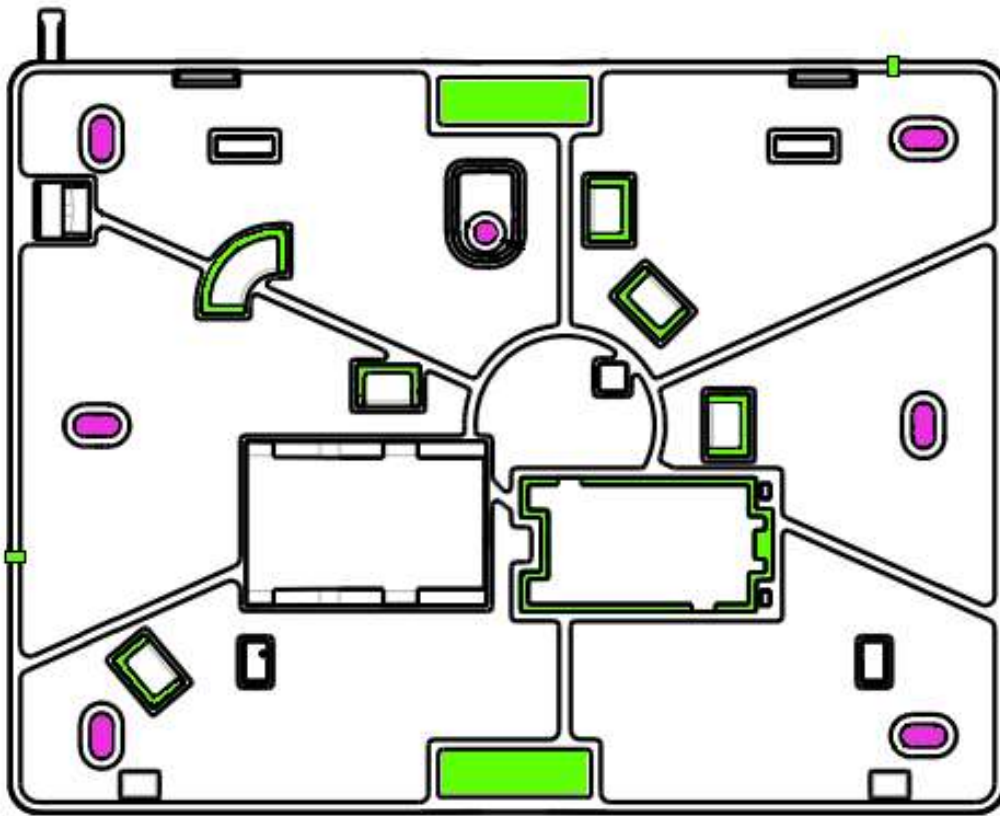
Figure 2 - Retro DS500
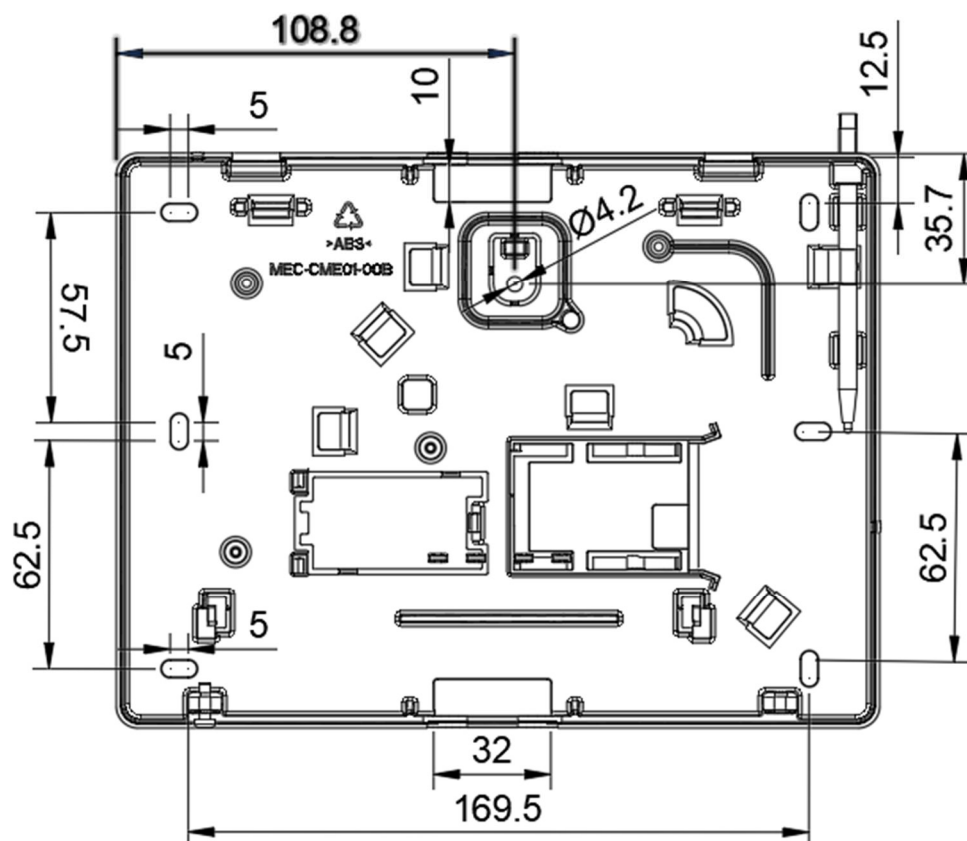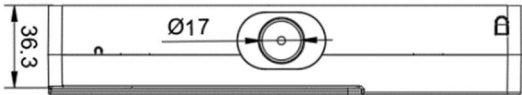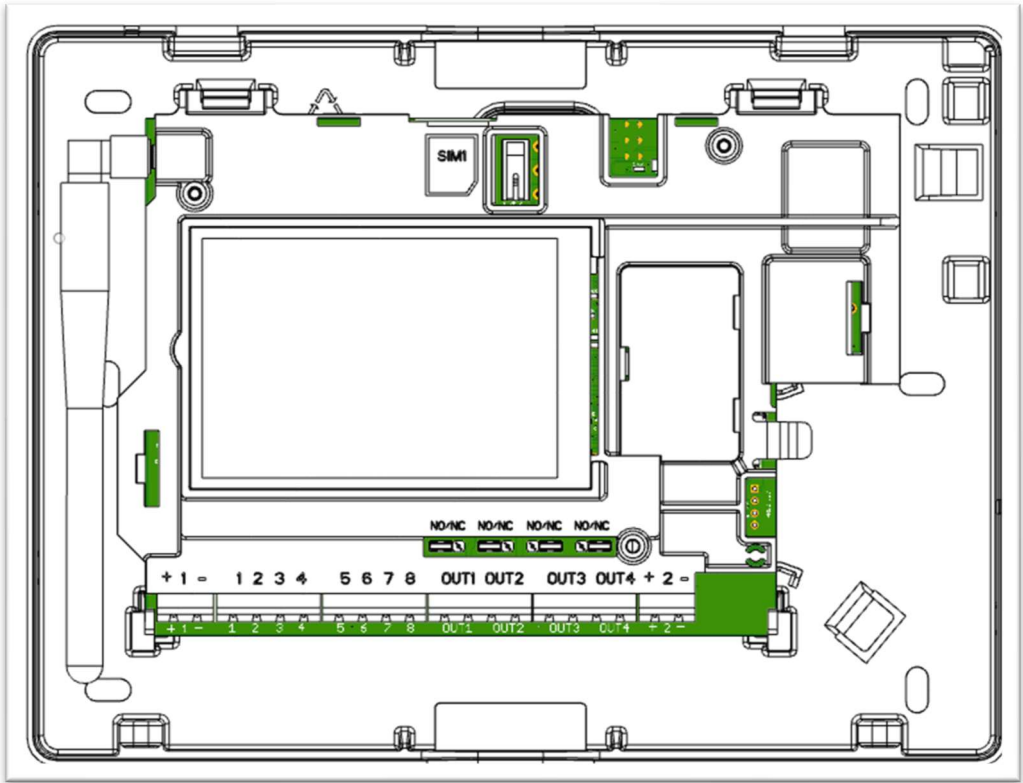
1	main power (+)
2	main power (-)
3...10	input 1...8
11, 12	output 1
13, 14	output 2
15, 16	output 3
17, 18	output 4

Features

Dimensions	• Length: 208.4mm; Height: 157.4mm; Depth: 39.3mm
Display	• Resolution 480x320, 65k colors, 100 Hz
Power supply	• Single power supply • From 10V to 30V in direct current
Electrical absorption	• Display ON 120mA (typ @24V); max 3.9 W • In alarm: call 130mA; outputs: 20mA to activated relay
Electric fuses	• Not present
Communication protocols	• GSM/GPRS, LTE
Operating frequency band	• GSM: EGSM900MHz, DCS1800MHz • LTE-FDD: B1/B3/B5/B7/B8/B20
Maximum radio frequency power	• GSM/GPRS: (max) 33dBm±2dB • LTE: (max) 23dBm±2,7dB
Operating temperature	• From 0°C to 45°C (INDOOR USE ONLY)
Operating humidity	• Non-condensing
IP rating	• IP30
Space for buffer battery	• Internal with 3 hours autonomy (stand by) • Use only PTR-5C or BL-5C ion batteries WARNING! Explosion hazard if the battery is replaced with another of the wrong type. Dispose of used batteries following current regulations
Storable contact numbers	• Up to 500 phone contacts, all individually settable • Up to 4 association groups
Storable SMS	• Up to 25 storable messages, up to 160 characters each • Possibility to concatenate messages
Audio messages	• Up to 10 TTS audio messages
Outputs	• 4 programmable relay outputs with continuous or pulse activation (adjustable high state time)

	• Contacts settable "NO-Normally Open" or "NC-Normally Closed" by positioning of jumper • Relay limit voltages 30V - 1A MAX • Max switched voltage: 125VAC/60VDC
Inputs	• 8 programmable inputs • Minimum voltage 0V. Maximum voltage equal to that of the external power supply • Possibility of normally closed or normally open connections, reference both from positive and negative (see chapter 9.1 Inputs) • Compatible with single or double balancing configurations
Shell material	• ABS (white)
Weight	• 300 grams
Anti-tampering	• Presence of internal and removal tamper
Programming	• Local: via touch screen • Remote: via website (browser functions coming soon)
Output control	• Local: via digital button for tests • Remote: via SMS, calls and browser
Additional features	• Event log • Dedicated SIM card • Customization of menu colors • Operation log • Event report • Thermistor • Alarm sequence management • Multilingual (English, Italian) • One year of SIM traffic (from activation)

1. Introduction

The DS500 is a telephone dialer capable of programming a series of chain operations ranging from simple domestic use to security-related applications.

The fully programmable nature of the DS500 allows for wide versatility; equipped with 8 input lines and 4 output lines, it can interact with almost all external devices equipped with digital inputs/outputs.

It is possible to receive calls and warning SMS based on the occurrence of programmed events, furthermore it is possible to interact with them remotely, always through calls, SMS, and even browsers.

Possibility of reaction to a series of events such as disconnection from the power grid, input switching, low battery voltage, tampering with inputs, and unauthorized tampering and/or removal of the device.

2. Installation procedure

This section is dedicated to describing the device installation; **READ BEFORE STARTING**.

Disassemble the shell and then remove the internal part of the DS500. Help yourself with the back of the shell and a level to mark on the installation surface the points where the DS500 will be fixed [Figure 2 - pink field]. Install the device preferably at human height (1.40 ÷ 1.60 mt from the floor). Drill holes in the wall and possibly dowel. Pay attention to fix the central screw to the wall that acts as a support for the tampering switch located on the back.

Pass the cables through the appropriate slots (possibly to be opened) and for the appropriate supports [Figure 2 – green field].

NOTE1: the central cable passageway, once the piece of plastic has been removed, must be reinserted into the appropriate supports to protect the electronics.

NOTE2: in case of the absence of a GSM signal in the installation location, it is preferable to connect an antenna with a cable equipped with a male SMA connector and let it exit through the appropriate slots to be opened laterally on the shell to reach an external area where to get the signal.

Below is a list of the planned cables:

Type of connection	Type of cable
Power supply	Self-extinguishing flexible wire for electrical panels according to regulations.
Inputs/outputs	Self-extinguishing flexible wire for electrical panels according to regulations.

Fix the base of the DS500, possibly using a level, on the designated surface.

Connect the GSM antenna and then put the internal part of the DS500 back in its place. Use the appropriate screws to fix the internal part of the rear shell.

If supplied, put the buffer battery in place WITHOUT INSERTING IT. If you want to remove the internal part of the device, remember to remove first the battery to avoid damaging the underlying connection.

Make the connections to the board, first the negative pole of the power supply and then the rest (except the positive pole of the power supply) appropriately tightening the terminals. **NOTE:** remember that the input voltage limits depend on the input power.

Position the output jumpers as needed (in the figure below we see the NO position).

NOTE: make sure the jumpers are inserted for the correct operation.
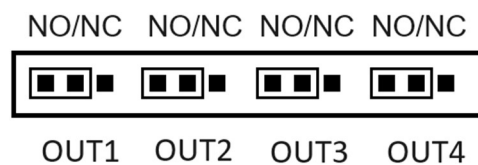
Make single and double balancing connections where necessary (below are the drawings with the correct resistance values for the configuration).

Supervised connections:

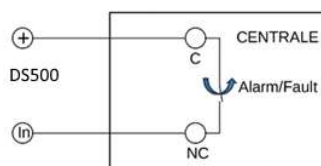| **Double balancing**	**Single balancing NO**	**Single balancing NC**
Allows the distinction between:	Allows the distinction between:	Allows the distinction between:
• Idle input	• Idle input	• Idle input
• Activated input	• Activated input	• Activated input
• Failure due to open circuit	• Failure due to open circuit	• Failure due to open circuit
• Failure due to short circuit		
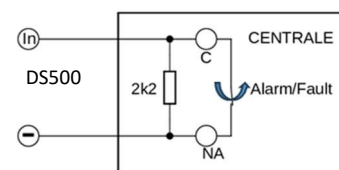
Unsupervised connections:

NOTE: they only allow to distinguish between alarm and rest, but they are configurable in polarity:
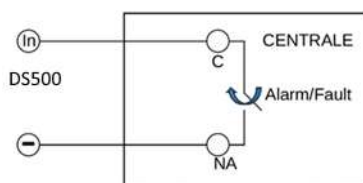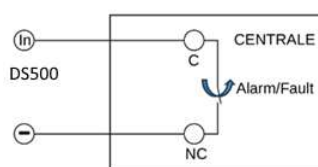
Negative command normally open
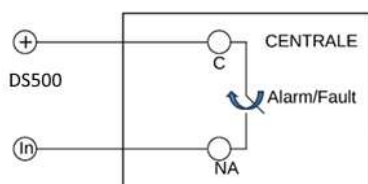
Negative command normally closed

Positive command normally open

Positive command normally closed

Connection to single and double contact of external resistors: how and where to connect them?

For optimal protection from sabotage, the balancing resistors must be connected directly to the arrival terminals, that is, at the endpoint of the line section. NOTE: it is absolutely forbidden to connect them along the wiring or, worse, to the DS500 terminals because the protections from short-circuit, sabotage, and anti-tampering would be ineffective.

Tip: to avoid short circuits and false contacts, shorten and isolate the terminals of the resistors, space them out and tighten the terminals well.

Once all connections to the system have been made, always if provided, insert the main power supply, the secondary one, and finally the buffer battery, in this order. NOTE: the power supply of this device must be in the same building as the device itself.

3. Navigation and interaction

Before turning on the device, it is good to clarify some details about how to interface with the DS500.

- The screen is resistive, so it is sensitive to the simple physical contact of the stylus provided (also executable, for example, by the cap of a pen, as well as by our fingers).
- To be able to move in the list menus, the correct movement is to "scroll" the items with the stylus (movement from the bottom upwards to scroll down the menu, movement from the top downwards to scroll it upwards).
- The keypads inside the DS500 are of two types: QWERTY and "numeric".
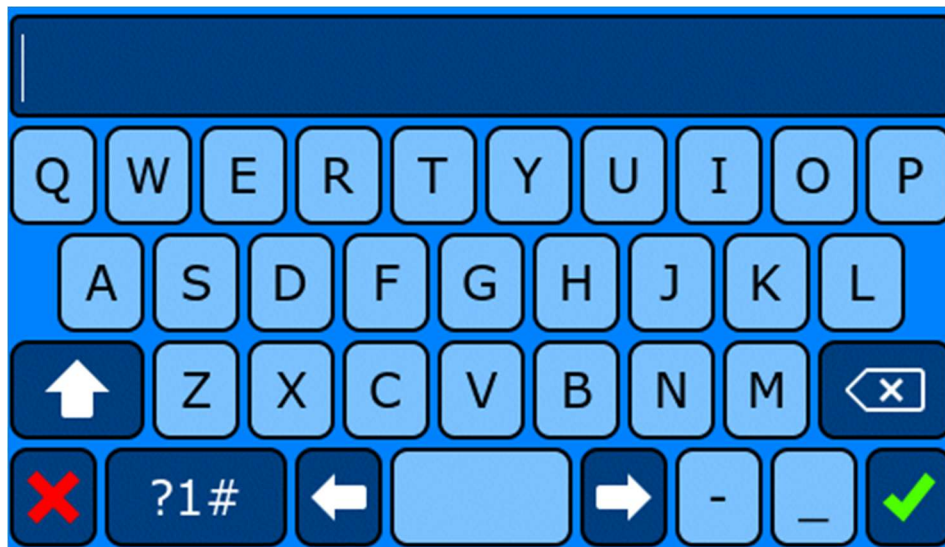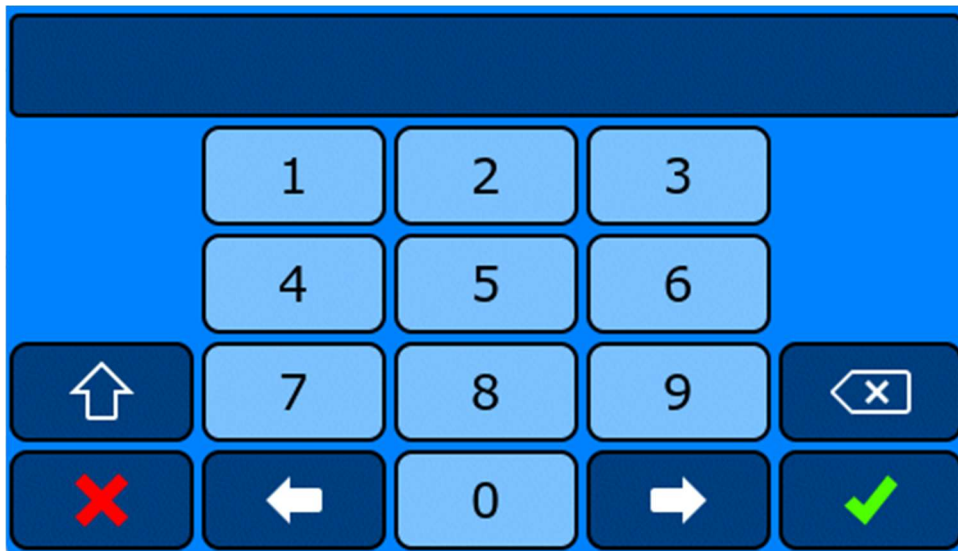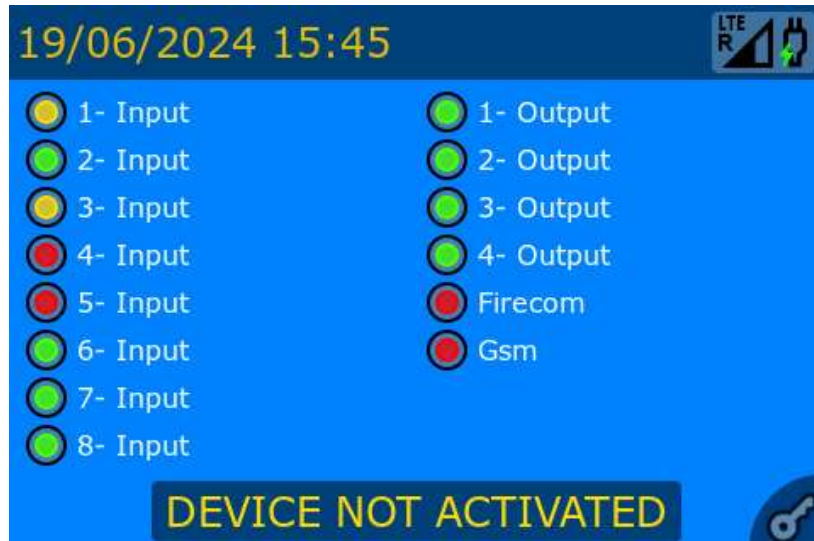
There will be 3 types of symbols:
- ❌ to cancel the typing operation.
- ✅ to confirm the typed text.
- ⬆ for uppercase letters or to reach special characters that do not have a dedicated key.

4. First start and unlock the screen

After connecting the power supply according to the "Installation" chapter, press the screen once to light it up. We can notice a series of overlay information, such as the states of inputs and outputs, the availability and use of communication protocols and the actual connection status of the services.

The call service is represented by the icon and is linked to the dialer's call activities. Below is the summary table of the call states:

Call in progress	The phone is ringing	A contact has answered	No contact has answered

Below are an explanatory table of the color code used:

ring ⟶ ⟵ fill

Ring: indicate the type of input programming (output is only normal).

Fill: indicate the state of the input/output.

| Ring/fill	Input	Output
Black ring	Everything else	Normal edge
Red fill	Active	Active output
Yellow fill	Input in fault state	/
Green fill	Inactive	Inactive output
Examples:		
🟢 Input/output normal state		
🔴 Input/output active state		
🟡 Input/output in fault state		

ring → 🟢 — fill

Ring: indicate if the medium is in use or if a service is connected.

Fill: indicate if the service/connection is online or disabled.

Ring/fill	Service	Connection
Black ring	Not connected	Not in use
White ring	Connected	In use
Red fill	Service offline	Not connected
Yellow fill	Temporarily offline service	Connected without internet
Green fill	Service online	Connected with internet
Grey fill	/	Not active
Examples:		
🟢 Online and in use		
🟢 Online but not in use		
🟡 Recently offline		
🔴 Offline		
⚫ Service/connection disabled		

In the lower central part of the screen, there is an indication of the status 'Device not active' of the DS500 (that indicates the request for device activation).

Touch the key in the lower right corner of the screen to access the unlock screen. Enter the unlock password (by default the **installer password is "54321"**, while the **maintenance password is "12345"**) and confirm.
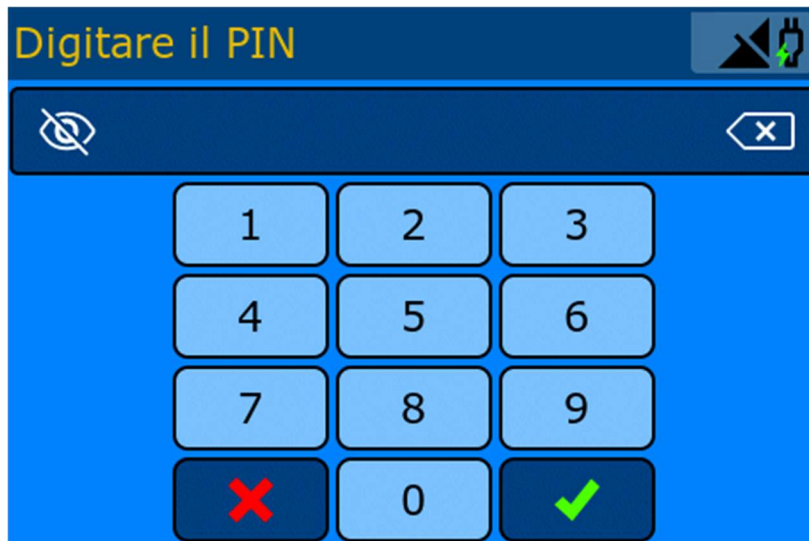

WARNING! It is recommended to change the passwords as soon as possible for security reasons.

NOTE: Entering the main menu will reset the outputs and ongoing calls.

4.1 Shortcut and main screen functions

The main screen presents several functions to directly access the settings menus without going through the main menu.

To do this, **shortcuts** described in the following figure are used:
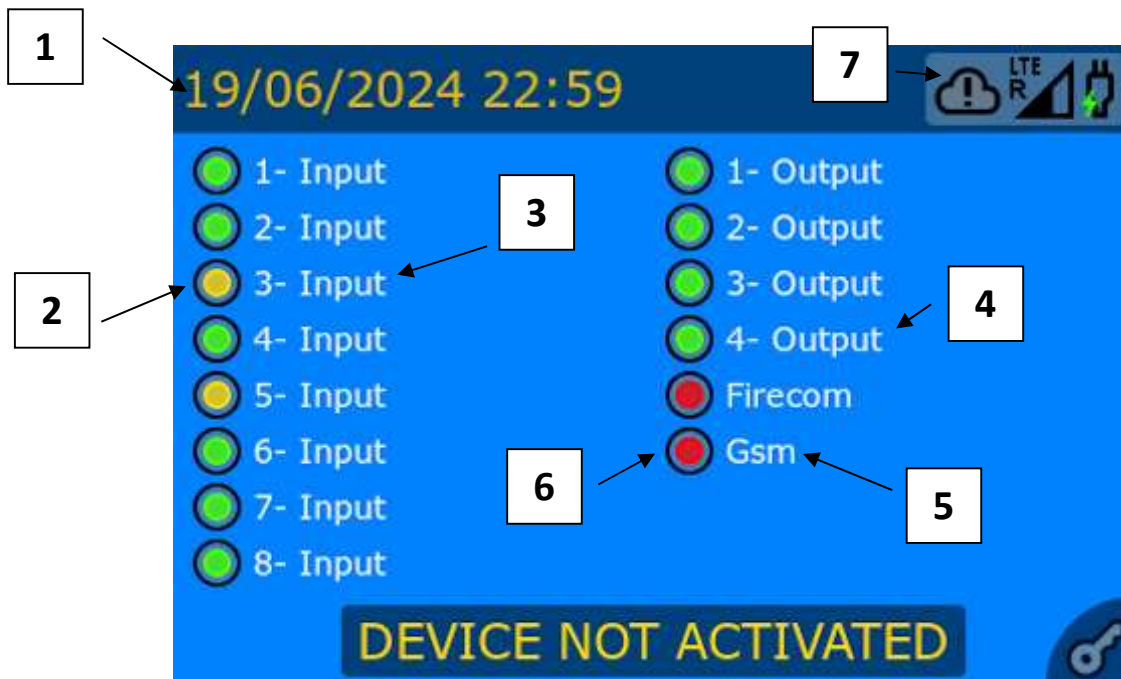
1. "Date and Time" setting.

2. "Event Generation" screen for inputs.

3. "Input Configuration" screen.

4. "Output Configuration" screen.

5. "GSM" setting.

6. "Alarm Sequence" setting.

7. Firmware Update

To access the settings, you will need to access them through the credentials of:

Installer: can view and modify.

Maintainer: can only view.

Once the password is entered, you can navigate from one shortcut to another without having to re-enter it. To indicate the level of access, instead of the icon will be displayed and . Once finished, click the icon in the lower right to re-lock the device and re-enable the triggers**.**

NOTE1: entering with a password unlocks the device and thus enables the reset of ongoing calls; by locking the screen, the reset of the outputs is enabled.

NOTE2: the device will auto-logout when the screen turns off, automatically re-enabling the triggers.

NOTE3: In the absence of main power, the device will remain on, but the associations related to inputs and calls will not trigger (the remaining associations will work as expected).

To start the firmware update, click on the and confirm. The device will restart, downloading the software via GSM and updating the software subsequently. NOTE: Do not remove the power supply during the process.

4.2 "Under maintenance" State

By accessing the menu, using shortcuts, or keeping the appropriate input active (see chapter 9.1 Inputs), you enter a state called "under maintenance." During this state, you can see on the screen the effect of the inputs, manually activate the outputs (see chapter 9.2), but **the triggers of associations and communications are all disabled**.

4.3 System activation

Once the password is entered, the following screen will appear inviting us to register the product.

The DS500 accesses the network for registration via GSM; however, it is possible to temporarily skip the registration procedure and set up the product (communication protocols, associations, surveillance service data, etc…), but note that: not all services will be active until the device registration is completed. In this regard, the registration procedure will be proposed again, every time you log in using a password, if the product is not yet active.

Following the QR code, you will be directed to the registration site which looks as follows:

If you do not already have an account, proceed with the registration procedure.

Once inside our profile, our workspace will give access to all devices registered on that account:

By clicking on "+ Add device" the OTP code will appear to be entered inside the DS500. The latter will have a validity of 5 minutes (if the code expires it will be possible to generate other codes). Once obtained, press "Ok" on the device to be able to enter the code. Once this is done, it will communicate its information to the site and associate with the account appearing in the workspace.

At this point, the DS500 will have unlocked its full functionality.

From the site, it will be possible to manage the family of registered devices. In addition to the status of the devices, it will be possible to:

- Deactivate/activate a device remotely.
- View the status of the device in detail.
- View the status of the device in detail.
- View the status of the device in detail.
- Renew the annual SIM subscription.

5. Main menu

After the first power-on settings, the main screen of the device looks like this:

In the upper information bar, the following are displayed:

- ◁ GSM connection status and presence of SIM card.
- Power status: if only the power supply is inserted, the symbol will appear ⚡. In the presence of a backup battery, the power plug icon

will be replaced by the battery icon 🗋 also indicating the charge level (🗋, 🗋, 🗋, 🗋, 🗋, 🗋).

In the center, we can see the icons of the DS500. By touching them, it is possible to access the various setting menus:

- Phonebook 👤.
- SMS ✉.
- Voice messages ᴏᴏ.
- Configuration ➡⬅.
- Report 📋.
- Event log 📑.
- Monitor 🖳.
- Settings ⚙.

At the bottom is located the "Lock" button for screen lock. **While setting up the DS500, all input triggers and alarms will be inhibited. To re-enable them, you must return to the lock screen.**

6. Phonebook

By selecting the icon (👤) you can **control, manage, and add contacts** to the user list.

To **add a new contact**, press the "New" button.

From the screen, perform the following steps:

- Add a "Name".
- Enter a "Phone" number.
- Assign a "Label".
- Select the "Permissions" to assign to the contact.

If you want to modify one of the items just described, select the contact and press the "Edit" button.

To **delete a contact**, select the interested contact and press the icon (   ). Confirm with the "Ok" button or press "Cancel".

To cancel or exit the screen, press the "Back" button.

6.1 Contact

The single contact consists of an identifying name (preferably unique) and a telephone number. The latter should preferably be added by adding the designated national prefix (for example: in Italy is '+39').

6.2 Label

Associates the contact with a group of users. These groups can be used for multiple notification sending (see paragraph 9.3 Associations).

6.3 Permissions

Each contact can be assigned permissions that authorize the user to access:

- **Alarm block**: the contact is enabled to perform a **remote alarm reset** operation via SMS command, smartphone application, or software. Contacts who have the "Alarm Block" permission automatically inherit the title of 'Administrator' within the phonebook.
- **Command outputs (all)**: allows the contact to activate every available output (as if they were all selected).
- **Command output 1-4:** allows the contact to remotely activate the relative output.

7. SMS

By selecting the icon (✉), you can access the screen where it is possible to **create SMS templates** to forward to contacts, associating them with certain events (see 9.3 Associations).

To **add an SMS**, press the "New" button.

From the screen, perform the following steps:

- Enter the "Name" identifying the message.
- Enter the "Text" that composes the message.

If you want to modify one of these two parameters, select the interested SMS and press the "Edit" button.

To **delete an SMS**, select the interested message and press the icon (🗑). Confirm with the "Ok" button or press "Cancel".

To cancel or exit the screen, press the "Back" button.

8. Voice messagges

By selecting the icon (ᴑᴑ), you can create audio messages to forward to designated contacts.

To **create a new audio message**, press the "New" button".

From the screen, perform the following steps:

- Enter the "Name" identifying the message.
- Enter the "Text" that composes the message.

Once this step is completed, press the "Save" button; a screen with a loading bar will start to indicate that the device is generating and downloading the audio file of the message text from the Firecom server. In case of a lack of server communication, an error message will appear announcing the impossibility of closing the operation. Once the process is finished, it will return to the initial screen.

If you want to modify one of these two parameters, select the interested audio message and press the "Edit" button.

To **delete an audio message**, select the interested item and press (🗑). Confirm with the "Ok" button or press "Cancel".

To cancel or exit the screen, press the "Back" button.

9. Configuration

By pressing the button ( ), you access the associations submenu where you can set:

- The types of inputs ( ).

- The types of outputs ( ).

- The events and actions associated with inputs and certain preset events ( ).

9.1 Inputs

In this menu, we can see the entire list of inputs available on the DS500. By selecting the individual input, we can perform the following actions:

- **Rename the input** by pressing the "Rename" button.
- **Modify the type of input** by pressing the "Edit" button.

We notice that under the name of the input a brief description of the set characteristics appears. The "Edit" menu is as follows:

The input configuration takes place through these four options:

Contact type: We can configure an input for contact type:

- **Normally open positive**.
- **Normally closed positive**.
- **Normally open negative**.
- **Normally closed negative**.

These depend on the type of application that I have to implement.

Balanced input: fundamental for security and fire applications. They must be set by selecting **single** or **double** balancing. Note that for double balancing we have only negative connections available, while for the single one only the normally closed negative connection. For installation notes, see the previous chapter "Installation".

Standby input: indicates whether the input is enabled to activate the previously described maintenance mode.

Reset input: indicates whether the input is enabled to block an alarm (commonly called alarm reset). If enabled, when activated it returns the outputs to their normal state, cancels the sending of SMS, and blocks calls. NOTE: a reset input that has actions associated with activation will not perform those actions as they will be automatically canceled as a consequence of the activation of the reset effect.

9.2 Outputs

In this menu, we can see the entire list of outputs available on the DS500. By selecting the individual output, we can perform the following actions:

- **Rename the output** by pressing the "Rename" button.

- **Manually switch the output for tests** by pressing the icon (⊡) (you can hear the relay switch when you press the button). NOTE: This function is only useful for tests. When you exit the menu, the output returns to its original state.

- **Modify the type of output** by pressing the "Edit" button.

We notice that under the name of the output a brief description of the set characteristics appears. The "Edit" menu screen is as follows:

It is possible to select two types of outputs:

- ⌐ **Continuous output**.
- ⊓ **Impulsive output**.

By selecting an impulsive output, it is also possible to set the duration of the impulse through the appropriate horizontal bar.

9.3 Associations

In this menu, we can see the entire list of events that can generate alarms (both related to inputs and the occurrence of some expected events).

To create an association, choose the event of interest and press the "Edit" button.
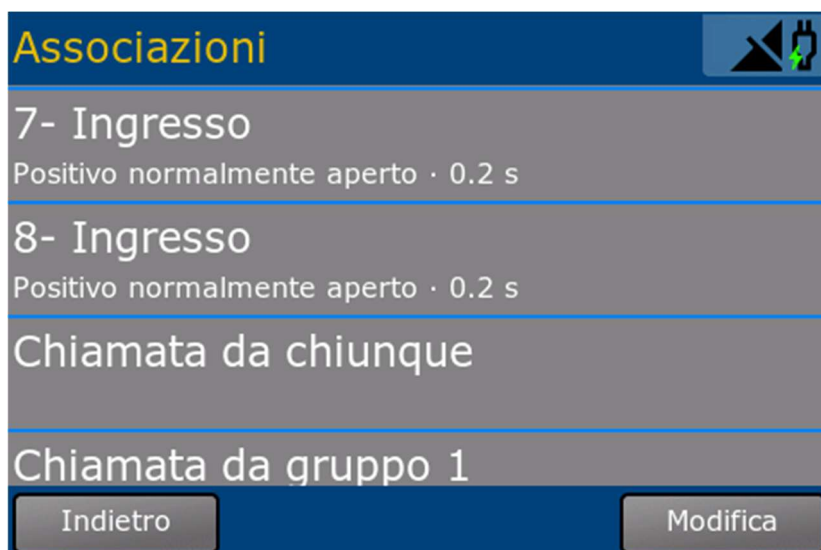
Upon opening the screen, all instances that can characterize that type of event are listed:

- On **activation**: when the event occurs.
- On **deactivation**: when the event returns to normal.
- For **short circuit**, **open circuit** or **restored circuit**: when the connection fails, is tampered with or repaired (present only on inputs).

Subsequently, you need to choose the actions to be performed by the DS500

Based on the icon we select, we can:

- ✉ decide which messages to send and to which contacts.
- ☎ decide which voice messages to send and to which contacts.
- ➭ decide which outputs to activate.

The DS500 first executes the commands on the outputs, then sends the SMS and then makes the calls.

A summary with a description of the events managed by the DS500:

- Input 1-8: switching of the set inputs. Under the name, we have a summary of the characteristics of each input.
- Call from anyone: incoming call from a number not assigned to a group.
- Call from groups 1-4: incoming call from a registered contact belonging to a group.
- Main power supply absent.
- Low battery.
- Mobile network absent.
- Low ambient temperature.
- High ambient temperature.
- Internal anti-tampering sensor.
- External anti-tampering sensor.
- General fault.
- Internal error.

10. Report

By pressing the button (▣), you can access the report screen that summarizes all the associations set for each scheduled event to have a simple and complete view of all the actions set by the user.

It consists of a list of actions between Outputs, SMS, and Voice Messages, and each element shows at the bottom the number of events associated with them.

To view the details of an event, select the desired item and then press "View".

11. Event log

By pressing the button (⊡), you can access the registry screen where all the following events are automatically recorded, up to a maximum of 960:

Input	- Activated - Deactivated - Open - Short circuit - Restored	Records the activation, deactivation, circuit opening, short circuit, and return to normal state of an input "x"
Output	- Activated - Deactivated	Records the activation or deactivation of an output "y"
Tamper	- Internal activated - Internal deactivated - External activated - External deactivated	Records the activation or deactivation of the two tampers
Thermistor	- High limit exceeded - Low limit exceeded	Records the rise or fall of temperature above or below a limit
Call	- Outgoing - Incoming - Missed	Records the initiation of a call, the arrival of a call, or a missed call attempt
Message	- Sent - Received	Records the sending of an SMS or the arrival of an SMS from a external number
Access	- Maintenance - Administrator	Records login and logout operations divided by

	- Terminated - Expired - Failed	maintenance or administration activities. Also records terminated, expired sessions, or failed attempts due to incorrect password entry
Communication medium	- GSM active - GSM disconnected	Records the activities of communication mediums, indicating when they are usable or not
Power supply	- Main present - Main missing - Battery low - Battery miss	Records the presence or absence of power sources and the battery status.
Reboot	- User reboot - Forced reboot	Records device reboots and their reasons
Events log	- Deleted	Records the complete deletion of the event log
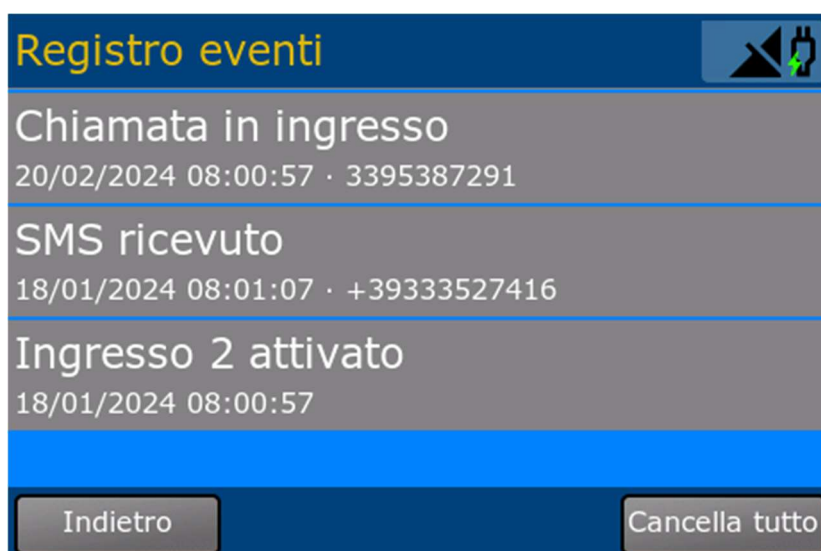
All the above elements are presented in a list, followed by a line indicating the date and time when the recorded event occurred.

It is also possible **to clean the registry** through the appropriate button at the bottom left of the screen "Clean all".

12.   Monitor

By pressing the button ( ), you can access the monitor screen to check the status of the digital inputs/outputs, the battery voltage value, the primary power supply and the room temperature value.

The activation status of an input or output is signaled with the display of the corresponding number (clearly and intuitively).
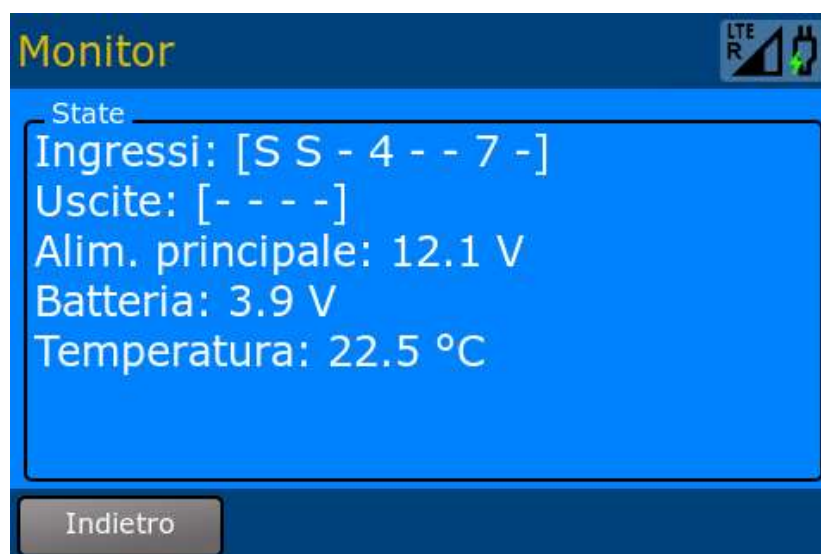
Below is the list of symbols that could appear on the screen:

- "n": where "n" is relative to the number of the input or output. It indicates that that specific input/output is active.
- "-": indicates that the input/output is deactivated.
- "S": indicates a short circuit on an input.
- "O": indicates an open circuit on an input.

13.   Settings

By selecting the icon (⚙), you can access the settings screen. To modify the various items, select them and press the "Edit" button. To cancel or exit the screen, press the "Back" button.

13.1 Languages

To **change the language**, select the desired one and then press "Save". Note: ENGLISH and ITALIAN languages are available.

13.2 Screen

To modify the screen parameters such as brightness, touch screen calibration, and color gradient, select the corresponding item and follow the procedure.

13.3 Date and time

By default, the device is set to "Set time automatically" and only the time zone will be needed.

To **change the date and time** manually, uncheck "Set time automatically" and scroll the numbers up or down.

You can also set the use of daylight saving time through the appropriate flag.

Once the operation is completed, press "Save". If the time is not set, the DS500 will start marking events at 00.00 on 1st January 2024.

13.4 GSM settings

It is possible to set up the GSM from this menu. **Enter the APN name** of your operator and indicate the **type of protocol used** among IPv4, IPv6 or IPv4/IPv6 (usually it's better to set the latter and the choice will be made automatically). Then enter the username and password, if requested by the operator, and the type of authentication (PAP/CHAP).

IMPORTANT: for the correct operation of the GSM, remove the PIN code block from the SIM card you want to use.

Press the "Default" button to reset the screen, to save the setting press "Save".

NOTE: with the DS500 SIM, setting this menu is unnecessary. Actually, the device only works with the native SIM card.

13.5 Alarm sequence

As for the associations related to alarms, it is possible to set the maximum number of call attempts to be made to the set contacts and the delay between call attempts from one contact to another.
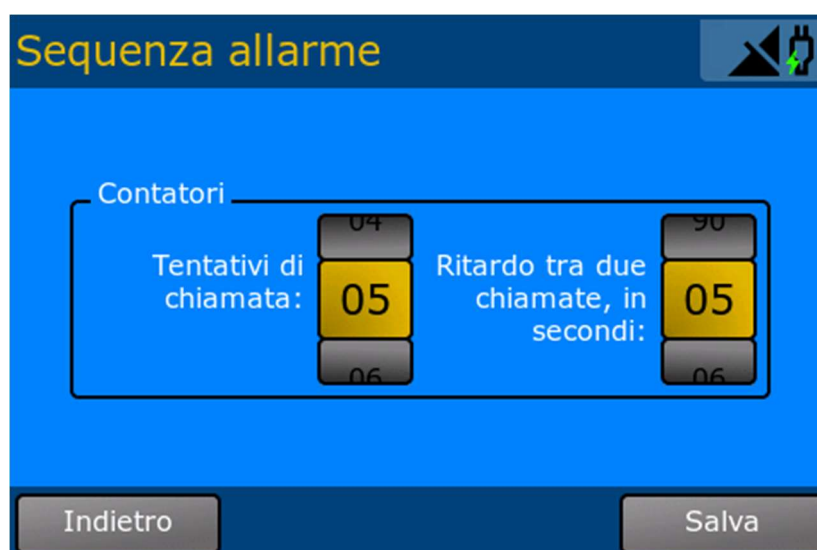
13.6 Autocompletion

From this menu, it is possible to set a pre-compilation of the various fields to be filled in during the setting of the DS500. This function is useful for sequencing many data record entries.

13.7 Theme colors

From this screen, it is possible to change the coloring of the various elements in the menus and submenus of the DS500 by selecting the appropriate (⬤).

13.8 User management

In this menu, you can **change the access credentials of the Administrator and Maintainer** of the DS500. To do this, select the corresponding item from the menu, enter the old PIN, and then enter the new PIN. You will then be asked to confirm the new PIN by re-entering it.

Once the PIN is confirmed, it will be changed.

13.9 System

In this menu, you can **restore the default settings or restart the device**. To do this, select the desired item, and press the "Ok" button to open the confirmation pop-up. Press "Ok" again to confirm or "Cancel" to return to the previous screen.

13.10 Device informations

This is an informative menu with information related to the firmware and hardware of the device.

14.   Remote commands

Remote commands allow a registered contact to remotely control the DS500 by sending SMS or DTMF commands (numeric keypad of the phone) during alarm calls.

Commands can be written in either lowercase, uppercase, or a combination of these.

14.1 SMS commands

Below we see the list of commands that can be activated via SMS and a brief explanation with examples:

- **ACTIVE:** it is used to activate the outputs of the DS500, and can be used by contacts who are enabled to activate the specified output or all outputs. To use this command, send the following SMS: "ACTIVATE *output*" where instead of *output* the number of the output that we want to bring to a high level must be put. It is also possible to concatenate the commands by putting more outputs following the command separated by a space.
  " Example: John is registered in the phonebook with control over outputs 1 and 4 and sends the SMS 'activate 1 3 4'. The DS500 will activate output 1 and 4, but will ignore the command related to the third output as John does not have permissions on it".
- **DEACTIVE:** it is used to deactivate the outputs of the DS500. It works like the ACTIVATE command.
  "Example: a possible SMS command, 'deactivate 1 2'".
- **RESET:** it is used to block all active alarms on the DS500. To be able to use it, the contact sending the message must be enabled to "Alarm Block" in the contextual menu.

- **STATUS:** returns an SMS containing information about inputs, outputs, tamper switches, main power supply, battery, and thermistor temperature.
- **RESTART:** remotely restarts the device.
- **HELP:** sends a list of available SMS commands on the device.

14.2 DTMF commands

DTMF commands can be used during a call by the DS500 in alarm procedure. To use these commands, the user needs the same permissions required by the equivalent SMS commands.

Through the tonal numeric keypad, it is therefore possible to:

- **Activate an output with the numeric keys 1, 2, 3, 4**.
- **Deactivate an output with the numeric keys 5, 6, 7, 8** respectively for outputs 1, 2, 3, 4: key 5 = output 1; key 6 = output 2; key 7 = output 3; key 8 = output 4.
- **Reset ongoing alarms with the hash key (#)** (User witch "Reset alarm"). In this case, the alarm sequence ends immediately.

Safety and Maintenance Information

⚠ DANGER: Before connecting or disconnecting cables, make sure the power is off. Install with power disconnected.

⚠ DANGER: Incorrect operation of powered equipment can cause fires, electric shocks or explosions, resulting in property damage, personal injury or even death.

⚠ DANGER: Check that the equipment is intact before connecting the cables to avoid electric shocks or fires.

⚠ DANGER: Before performing operations, remove conductive objects such as watches, bracelets, necklaces and rings to avoid electric shocks.

⚠ DANGER: During operations, use insulated tools to avoid electric shocks or short circuits. Ensure that the level of dielectric strength complies with local laws, regulations, specifications and standards.

⚠ DANGER: During use and installation, wear personal protective equipment (PPE) as required by current regulations.

General Directives
- Do not remove or disable upstream and downstream protection devices. Pay attention to the warning symbols and the related precautionary measures indicated in this document and on the equipment.
- If there is a risk of personal injury or damage to the equipment, immediately stop any operation, report the danger to the equipment supervisor and adopt appropriate protective measures.
- Do not power the equipment until it has been installed or checked by professional technicians.

- Avoid directly touching the power supply or using conductive objects such as damp cloths directly with the electrical parts. Before touching a surface or a conductive terminal, measure the voltage at the contact point and ensure that there is no risk of electrocution.
- In case of fire, immediately abandon the building or area where the equipment is located; activate the fire alarm or call emergency services. Do not enter the building or the area of the equipment concerned under any circumstances.
- A power generator cannot serve as a power supply for the device.
- Strictly follow the procedures described in the document for installation, operation, and maintenance. Do not make changes or alterations to the equipment, add components, or change the installation sequence without authorization.
- Updating the device's firmware can resolve some bugs and improve overall system performance. It is recommended to periodically check for updates to ensure the proper functioning of the device.
- The content and images in this manual may not be up to date. In case of discrepancies with the product, please check the most recent information from official sources.

Directives for personnel
- The use of the equipment is allowed exclusively to qualified personnel and professional technicians.
  - Professional Technicians: personnel who know the operating principles and structure of the equipment, are trained or experienced in the operation of the equipment and know the causes and degree of various potential risks in the installation, operation, and maintenance of the equipment.
  - Trained Personnel: personnel trained in technology and safety, who have adequate experience, are aware of possible personal dangers in certain situations, and can adopt protective measures to minimize risks to themselves and others.
- The personnel in charge of installing or maintaining the equipment must receive adequate training, be able to correctly perform all operations and understand and implement all necessary safety precautions and relevant local standards.

- Only qualified and authorized professional technicians can replace the equipment and/or components (including software).
- In case of detection of liquids inside the equipment, immediately disconnect the power supply and do not use until you have the authorization of a competent figure.
- Access to the equipment is allowed only to personnel assigned to work on it.
- Ensure that all tools used are ready and inspected periodically by an organization of professional technicians. Do not use tools that show signs of scratches or that do not pass the control inspection, or whose validity period has expired. Ensure that the tools are safe and not overloaded.

Electrical Requirements
- When routing power cables, make sure they do not twist. Do not join or solder power cables. If necessary, use a longer cable.
- Ensure that all cables are correctly connected and insulated and that they meet the specifications stated in current standards.
- Ensure that the slots and holes for cable routing are free of sharp edges and that the positions where cables are routed through pipes or cable holes are equipped with soft materials to prevent cables from being damaged by sharp edges or burrs.
- Drill holes in the equipment only where indicated by the manufacturer.
- During the selection, installation and routing of cables, adhere to local safety rules and regulations.
- Do not use the equipment without its shell, mask, or protections.
- Periodically check the connections of the equipment, ensuring the integrity of the cables and that all screws are tightly tightened.
- A damaged cable can only be replaced by qualified professional technicians.
- Do not erase, damage or mask any label affixed to the equipment. Immediately replace worn labels.
- Do not use solvents such as water, alcohol or oil to clean the electrical components inside or outside the equipment.

Environmental requirements

- Do not place the equipment near heat sources or flames, such as smoke, candles, heaters, or other heating devices.
- Install the equipment in an area away from liquids. Do not install it near areas subject to condensation, such as water pipes and air exhaust vents, or in areas subject to water leaks, for example under the vents of the air conditioner, ventilation vents or power cable panels in the equipment room. Ensure that no liquid enters the equipment to avoid failures or short circuits.
- Do not install the equipment in an environment with direct light, dust, smoke, volatile or corrosive gases, infrared rays and other types of radiation, organic solvents or brackish air.
- Do not install the equipment by applying it to conductive metal or in an environment where magnetic dust is present.
- Do not install the equipment in an area that favors the growth of microorganisms such as fungi or molds.
- Do not install the equipment in an area subject to strong vibrations, noise or electromagnetic interference.
- Ensure that the site complies with local laws and regulations and related standards.
- Do not install the equipment in a position where it could be submerged by waters.
- Do not install the equipment outdoors.
- When installing the equipment, ensure that the installation surface is sufficiently straight so that the back of the shell remains adherent to the plane.
- After installing the equipment, remove packaging materials such as the screen protective film.

Maintenance Table:

NOTE: Verify the correct operation of the device before starting maintenance

Operation	Modality	Frequency
Cleaning of the shell	▪ Removal of any dirt and dust residues.	At least once every 12 months
Electrical connections	▪ Check the tightening of the terminals. ▪ Check the integrity of the connected cables. ▪ Check that the voltage drops on the cables are as expected.	Once every 3 months
System status	▪ Check that there are no damages or deformations on the device. ▪ Check the status of the power line and the battery through a measuring instrument and monitor screen. ▪ Check that the expected communication systems are online. ▪ Check for system updates.	Once every 3 months

Proper disposal of the product

(Waste Electrical and Electronic Equipment)

(Applicable in European Union countries and those with separate collection systems)

The mark on the product or its documentation indicates that the product should not be disposed of with other household waste at the end of its life cycle. To avoid possible damage to the environment or health caused by improper waste disposal, the user is invited to separate this product from other types of waste and to recycle it responsibly to promote the sustainable reuse of material resources.

Domestic users are invited to contact the retailer where the product was purchased or the local office responsible for all information related to separate collection and recycling for this type of product.

Business users are invited to contact their supplier and check the terms and conditions of the purchase contract.

This product must not be disposed of together with other commercial waste.

Declaration of conformity:

Synaps Technology S.r.l., Via Pietraferrata 9/1 – 34147 – Trieste; declares that the **DS500** equipment complies with the essential requirements required by the **European Directive 2011/65/EU, 2014/35/EU and 2014/53/EU**. Compliance has been verified according to the harmonized regulations listed within the regulatory list present in this manual.

RoHS

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